

What is claimed is:

1. A method of making a catheter, comprising the steps:

providing a shaft having a proximal region and a distal region;

providing a balloon on the distal region of the inner shaft;

placing a retaining sleeve having a length and a first and second end around at least a portion of the balloon and the shaft;

heat shrinking the retaining sleeve;

securing the balloon to the shaft; and then

sterilizing the catheter with at least a portion of the retaining sleeve remaining shrunk around the catheter.

2. The method of claim 1, wherein the retaining sleeve, at least in part, forms a distal tip.

3. The method of claim 1, wherein the retaining sleeve comprises a thermoplastic polymer which is substantially not cross-linked.

5. The method of claim 3, wherein the thermoplastic polymer is chosen from the group consisting of olefins, polyesters and urethanes.

6. The method of claim 1, the retaining sleeve being gradually heat shrunk along its length around the balloon and shaft.

7. The method of claim 1, wherein the retaining sleeve is formed from a material chosen from the group consisting of a liquid film, wherein the film solidifies prior to the bonding of the balloon to the shaft or a gel, wherein the gel hardens prior to the bonding of the balloon to the shaft.

8. The method of claim 6, the balloon having a proximal cone and waist, a distal cone and waist and a body portion there between, wherein the length of the retaining sleeve extends at least partially over the distal cone portion of the balloon.

9. The method of claim 8, wherein the length of the retaining sleeve extends at least partially over the body portion of the balloon and is capable of being used as a first stent retaining sleeve.

10. The method of claim 9, further comprising the step of loading a stent on the body of the balloon, such that the retaining sleeve at least partially covers the stent.

11. The method of claim 8, wherein the length of the retaining sleeve extends at least partially over the proximal cone of the balloon.

12. The method of claim 11, further comprising the step of loading a stent on the body of

the balloon under the retaining sleeve, the retaining sleeve comprising a proximal portion, a distal portion and a center portion, wherein the center portion may be torn away from the distal and proximal portion when the balloon expands and wherein the distal and proximal portions form first and second stent retaining sleeves, respectively.

- 5 13. The method of claim 1, the balloon having a distal region and a proximal region, wherein the proximal region of the balloon is positioned adjacent to the distal region of the shaft and wherein the retaining sleeve is placed over a portion of the balloon and shaft.
14. The method of claim 13, wherein the balloon and the shaft abut each other.
15. The method of claim 13, wherein the ends of the balloon and the shaft overlap.
- 10 16. The method of claim 13, the retaining sleeve being gradually heat shrunk along its length around the balloon and shaft.
17. The method of claim 13, further comprising the step of loading a stent on the body of the balloon, such that the retaining sleeve at least partially covers the stent, wherein the length of the retaining sleeve extends at least partially over the body portion of the balloon and is
- 15 capable of being used as a first stent retaining sleeve.
18. A catheter comprising:
- a distal shaft having a lumen and a proximal end;
- a proximal shaft having a lumen and a distal end, the distal end of the proximal shaft being connected to the proximal end of the distal shaft and the lumens of the respective shafts
- 20 being in communication with one another; and
- a heat shrinkable sleeve overlapping the proximal end of the distal shaft and the distal end of the proximal shaft, providing a water seal
- wherein the catheter is sterilized and prepared to safely enter a body.
19. The catheter of claim 18, wherein the distal shaft and the proximal shaft abut each
- 25 other.
20. The catheter of claim 18, wherein the distal shaft and the proximal shaft overlap.
21. The catheter of claim 18, wherein the retaining sleeve comprises a thermoplastic polymer which is substantially not cross-linked.
22. The catheter of claim 18, the retaining sleeve being gradually heat shrunk along its
- 30 length around the distal shaft and proximal shaft.
23. The catheter of claim 18, wherein the retaining sleeve is formed from a material chosen from the group consisting of a liquid film, wherein the film solidifies prior to the bonding of the balloon to the shafts or a gel, wherein the gel hardens prior to the bonding of

the balloon to the shafts.

24. The catheter of claim 18, wherein the proximal shaft is metal.

25. The catheter of claim 18, further comprising a port, wherein the port is positioned between the first and second ends of the retaining sleeve.

5 26. The catheter of claim 25, further comprising an inner shaft within the distal shaft, wherein the inner shaft is in communication with the port.

27. The catheter of claim 25, wherein the port is formed in the proximal shaft.

28. The catheter of claim 25, wherein the port is formed in the distal shaft.

29. The catheter of claim 25, wherein the port is formed in the distal shaft and the  
10 proximal shaft.

30. The catheter of claim 25, wherein the distal shaft and the proximal shaft abut each other.

31. The catheter of claim 25, wherein the distal shaft and the proximal shaft overlap.

32. A catheter comprising:  
15 a shaft having a distal portion and a proximal portion;  
a balloon mounted around the catheter, said balloon having a proximal portion, a distal portion and a center portion; and  
a heat shrinkable sleeve shrunk onto the shaft, the heat shrinkable sleeve at least partially covering a portion of the distal portion of the balloon,  
20 wherein the balloon is secured to the shaft and the catheter is sterilized and prepared to safely enter a body.

33. The catheter of claim 32, wherein the distal end of the balloon is attached to the distal end of the shaft.

34. The catheter of claim 32, wherein the heat shrinkable sleeve forms a distal tip.

25 35. The catheter of claim 32, wherein the at least a portion of the heat shrinkable sleeve is attached to the catheter.

36. The catheter of claim 32, the catheter further comprising a stent loaded on the center portion of the balloon, said stent having a distal end and a proximal end, wherein the heat shrinkable sleeve extends over a portion of the stent.

39. The catheter of claim 36, wherein the heat shrinkable sleeve extends over the proximal portion of the balloon.

40. The catheter of claim 36, wherein the heat shrinkable sleeve comprises perforations, such that when the balloon and the stent are expanded, the portion of the heat shrinkable sleeve which covers the stent breaks away with the stent.

41. The catheter of claim 32, further comprising a marker band mounted on the inner shaft, within the balloon, and a second heat shrinkable sleeve shrunk around the marker band.

42. The catheter of claim 32, wherein the shaft is an outer shaft, wherein the balloon has a proximal end, the proximal end of the balloon being secured to the distal end of the outer shaft, wherein a portion of the heat shrinkable sleeve overlaps the proximal end of the balloon and the distal end of the outer shaft.

43. The catheter of claim 42, wherein the outer shaft does not overlap the balloon.

44. The catheter of claim 42, wherein the outer shaft and the balloon overlap.

45. The catheter of claim 42, further comprising a stent retaining sleeve positioned within the retaining sleeve.

44. The method of claim 32, wherein the heat shrinkable sleeve comprises a thermoplastic polymer which is substantially not cross-linked.